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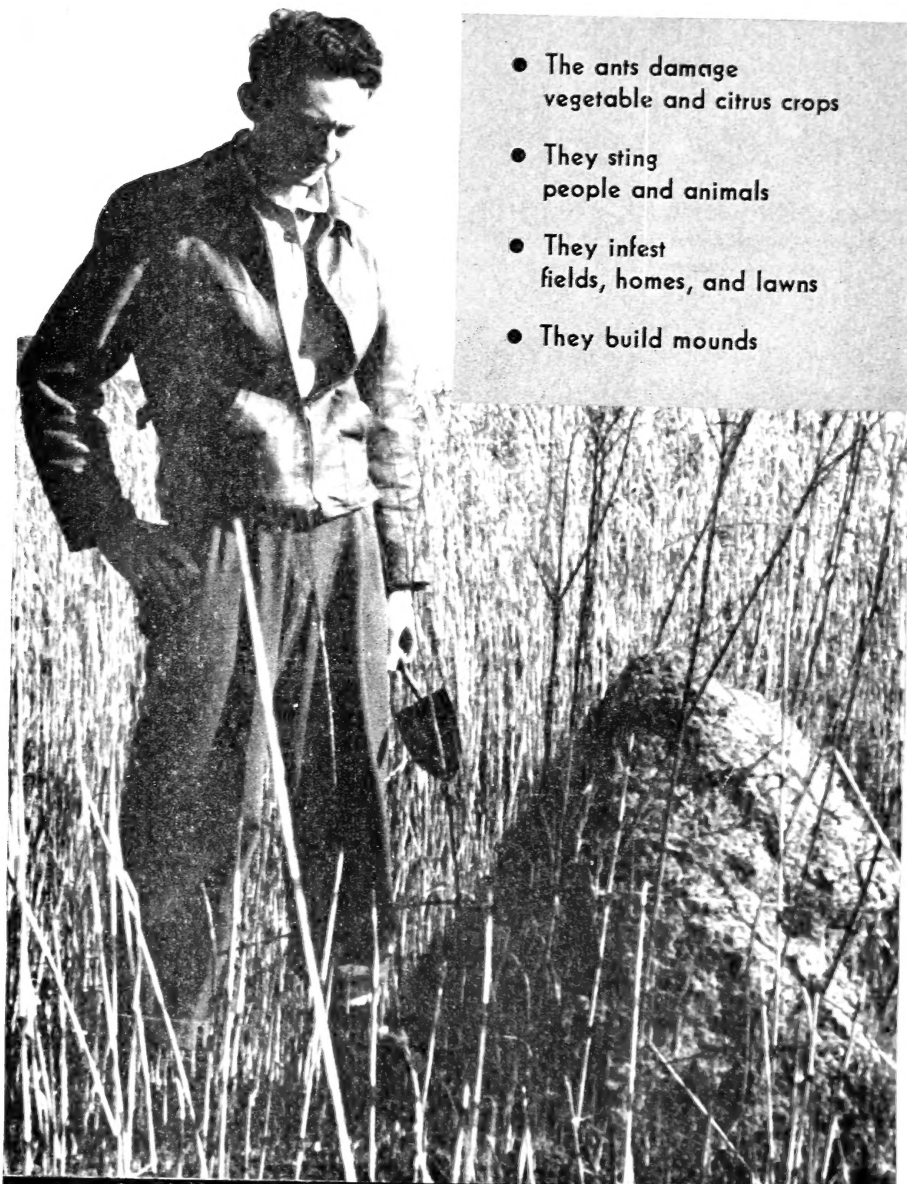
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The Imported Fire Ant

HOW TO CONTROL IT

- The ants damage vegetable and citrus crops
- They sting people and animals
- They infest fields, homes, and lawns
- They build mounds



U. S. DEPARTMENT OF AGRICULTURE

LEAFLET NO. 350

The Imported Fire Ant

HOW TO CONTROL IT

THE imported fire ant¹ is an annoying and destructive pest in most Southeastern States.

In fields, it feeds on okra, collard, cabbage, egg plant, germinating seed corn, and citrus trees; it often attacks newly hatched birds. In homes, it eats meat, butter, cheese, and nuts; it sometimes gnaws holes through clothing.

The ant has a painful sting. Its presence in the fields may interfere with the cultivation of crops. It stings by sinking its powerful jaws into the flesh, then driving in its stinger and injecting an irritating fluid into the wound.

If an infestation occurs, you can control these pests and minimize their annoyance and destruction.

The *imported* fire ant is so called to distinguish it from species of fire ants native to this country. The designation *fire* ant is in reference to the sting of these insects.

A distinctive characteristic of the imported species is its habit of building huge, hard-crustured mounds to house its colonies.

Origin and Spread

The insects slipped into this country unnoticed, probably as cargo stowaways from a South American port. Because they resemble native fire ants, they remained undetected

for several years. But about 1930 entomologists identified them as a separate species.

Entomologists believe that these ants first infested Mobile, Ala., and then rapidly spread to other parts of the South by flying and crawling, by drifting downstream in logs, by traveling aboard cars, trucks, trains, and airplanes, and by being transported in nursery stock.

By the spring of 1958, the pest was known to occur in nine Southern States. An early infestation in Shelby County, Tenn., has apparently been eradicated. Generally, the areas of heaviest infestation are in west Florida and the southern parts of Alabama, Louisiana, and Mississippi. Isolated infestations have been found as far north as Onslow and Wake Counties, N. C., and as far west as Bexar County, Tex. Other infested States are Arkansas, Georgia, and South Carolina.

The Damage They Do

Imported fire ants seriously damage many vegetable crops by feeding on the young, succulent plants. They soften the tender stems just below the soil, then suck the plant juices. In this way they gnaw holes in roots, tubers, stalks, buds, ears, and pods.

These pests often extend their attacks to young, unprotected animals, such as newborn calves and pigs and newly hatched quail and poultry.

¹ *Solenopsis saevissima* v. *richteri*.

They are very fond of quail; they enter the pipped eggs to get them. The ants often chase brooding hens off their nests and eat their chicks.

How They Develop

To get a clear picture of how the imported fire ant develops, it is necessary to understand that three adult forms exist:

1. **Winged fertile females (queens)**, which lay the eggs.

2. **Winged fertile males**, which mate with the queens.

3. **Worker ants**, which are wingless females. So far as is known, they are sterile.

An ant colony begins when the queen digs an underground chamber (later enlarged into a mound) and starts laying her eggs in clusters. First she lays clusters of 10 to 15 eggs. Later she gradually increases her output to clusters of 75 to 125, laying hundreds of eggs in all.

The queen looks after her first egg cluster almost constantly. She carries it about wherever she goes.

The eggs are smooth, shiny, and white. The clusters resemble finely ground meal. In 8 to 12 days the eggs hatch into larvae.

When the larvae appear, they are ready to start feeding. They are helpless, dirty-white grubs, and can hardly move. They depend on the queen and the workers. The queen feeds her first larvae food that is stored in her own body. Workers feed larvae of subsequent broods.

The larvae transform to pupae. Those that become worker ants after the pupal stage change into pupae in 6 to 12 days. Those that later become winged females or winged males take longer to develop.

The pupae resemble the adult ants in shape. It is easy to tell the different forms apart. Those that will



Cabbage stem damaged by imported fire ant.

be winged have paddle-like wing pads. Adults emerge in 9 to 16 days.

Appearance and Habits

Of the three adult forms, the workers, which are reddish to blackish red, are most numerous. An average-size mound may contain 25,000 workers.

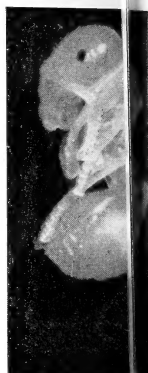
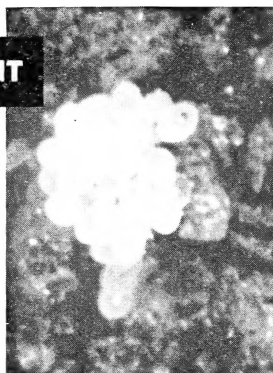
The workers range from $\frac{1}{8}$ to $\frac{1}{4}$ inch in length. Most of the smaller workers emerge from the queen's first egg cluster, and most of the larger ones from subsequent clusters.

The workers forage for food, maintain the mound, and protect the colony. The bigger workers perform these functions more efficiently than the smaller ones. They have more powerful mandibles for biting and chewing, and probably can store more fluid in their stingers.

The fertile winged forms are rarely seen. They live in seclusion until it is time for them to leave the mound

The Imported Fire Ant . . . Picture Story

DEVELOPMENT



Left: Cluster of fire ant eggs. Right: Larva.

Pupae re m

MOUNDS



Mound cross section showing spongelike interior.

The ants c

CONTROL



An orchard sprayer is used for treating mounds.

A weed b



adult ants in shape and in size.



Left: Worker ant. Right: Winged fertile queen.



build mounds around pine stumps.



Ants build new mounds (left), abandon old ones.



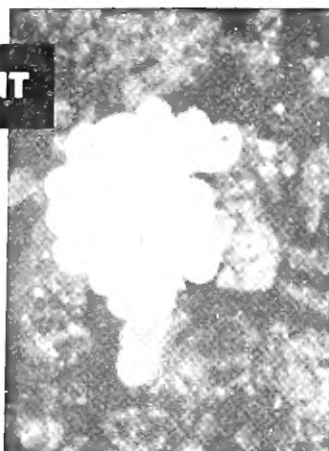
hitched to a jeep treats large area.



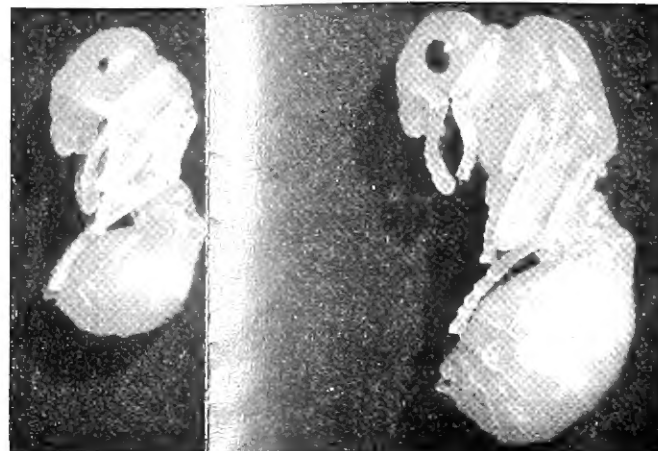
A compressed-air hand sprayer is used on lawns.

The Imported Fire Ant . . . Picture Story

DEVELOPMENT



Left: Cluster of fire ant eggs. Right: Larva.



Pupae resemble adult ants in shape and in size.



Left: Worker ant. Right: Winged fertile queen.

MOUNDS



Mound cross section showing spongelike interior.



The ants often build mounds around pine stumps.



Ants build new mounds (left), abandon old ones.

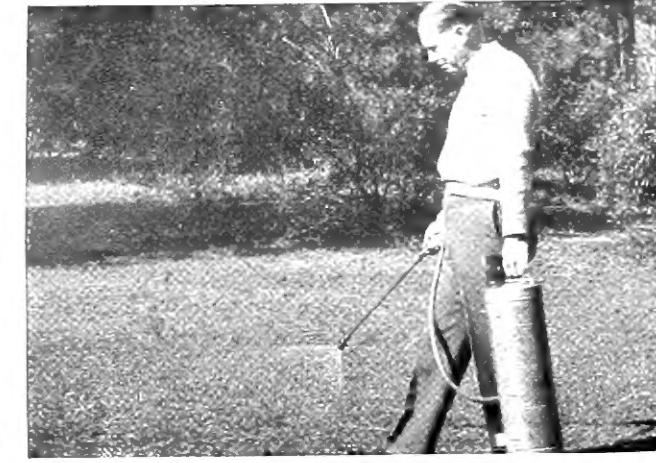
CONTROL



An orchard sprayer is used for treating mounds.



A weed boom hitched to a jeep treats large area.



A compressed-air hand sprayer is used on lawns.

and take off on their one and only mating flight.

When the mating flight is about to occur, there is a marked increase in activity in the colony. Workers make holes in the surface of the mound in several places. They run around excitedly on the outside of the mound and on nearby vegetation. At intervals a male or a queen comes out of the opening into the light.

The males are smaller and blacker than the queens. They take to flight quickly, and directly from the mound surface. The queens usually climb on nearby plants and slowly lift their bodies into the air.

Once airborne, the ants fly out of sight. The males die soon after mating. The fertilized queens find suitable nesting sites, cast off their wings (which are of no further use to them), and begin digging underground chambers in which to lay their eggs.

Mounds

Imported fire ants build mounds in almost any kind of soil. Some colonies exist on sandy and marshy lands near the Gulf of Mexico shoreline, others in rich river-valley soils.

Mounds are most common in open areas such as cultivated fields, pastures, parks, lawns, and meadows. They are often found in rotting logs and around pine stumps, and occasionally under buildings.

Wherever they are, the mounds create special problems. In parks and on lawns they mar the landscape and cause annoyance. Children and pets walk into them and get severely stung. In fields they are unsightly and cause damage. Blades of harvesting machines strike them and become twisted.

A typical mound develops when the workers emerging from the

queen's first brood begin enlarging her underground chamber. As additional workers appear, they join in the task until a mound is built to accommodate the large ant population.

When completed, the structure has a firm, honeycombed framework averaging 15 inches in diameter and 10 inches in height. The living quarters are subterranean galleries constructed within a V-shaped pattern and extending 3 feet downward.

On the outside, the mound appears to be a solid mass of earth. But after a heavy rain, workers can be seen crawling out of several holes in the surface to make repairs. When the job is done, they quickly close up the openings.

Only the winged forms leave the mound through openings in the surface. Workers leave through tunnels constructed just below the surface soil. They emerge from these tunnels at various distances from the mound and return the same way. The ants also use these passageways when they move to another location.

Why do the ants move? The action is generally prompted by conditions and happenings such as the following:

1. A colony of ants locates a new food source and builds a mound around it.
2. A disturbance to the original mound causes the ants to vacate.
3. The older mounds become too big and unmanageable.
4. Competition with other colonies for food causes them to move.

When it's time to move, the workers take complete charge of the operation. They guide the other ants through the underground tunnels. They carry the eggs and immature insects to the new location, which may be 25 feet from the old one.

After a mound is abandoned, the rain soon levels it to the ground.

Control

Chlordane, dieldrin, heptachlor, and aldrin are the best insecticides to use for controlling imported fire ants. They may be used to treat the mounds or areas where the ants are foraging.

Emulsifiable concentrates and wettable powders are available on the market to use in preparing sprays. Dusts containing these insecticides are also available.

Wherever possible, plan your control campaign during the cool fall and spring months. It is then that the ants are most active and the earth is moist enough to make the treatment more effective.

MOUND TREATMENT

In small, lightly infested areas, you can kill the ants by treating individual mounds. A 0.25-percent spray is highly effective for this purpose. You can prepare such a spray, using either chlordane, dieldrin, heptachlor, or aldrin, as follows:

Emulsifiable Concentrate	Tablespoon- fuls to 3 gal- lons water	Quarts to 100 gallons water
45% chlordane...	4	2
23% aldrin.....	8	4
15½% dieldrin...	12	6
23% heptachlor..	8	4

Wettable Powder	Ounces to 3 gallons water	Pounds to 100 gallons water
40% chlordane...	2.5	5
25% aldrin.....	4	8
25% dieldrin.....	4	8
25% heptachlor..	4	8

If you use a lower or higher concentration of insecticide, use proportionately more or less of it.

If you are treating a few mounds, apply the spray with a 12-quart sprinkler or water bucket. Where there are several mounds, an orchard sprayer with hose and nozzle attachment makes the job a lot easier. It holds more liquid and can be moved quickly from mound to mound.

Before applying the spray, break the hard surface of the mound to permit better penetration. Then pour or spray the liquid into the spongelike cavities. Apply about 3 gallons of spray to an average-size mound and an area 3 feet around it. *Make sure the mound is well saturated.*

Occasionally a portion of the colony may survive. Repeat mound treatment in about 2 weeks. Usually 1 gallon per mound is adequate to control these surviving colonies.

Dusts can also be used to control imported fire ants in their mounds. Use 5-percent chlordane, 2½-percent heptachlor, 2½-percent aldrin, or 1½-percent dieldrin. Apply 1 to 2 cupfuls, depending on the size of the mound. Work dust thoroughly into the soil with a rake or other garden tool.

When dusts are used, a second treatment is usually necessary. Use about 1 cupful of dust for each surviving colony until all the ants have been killed.

AREA TREATMENT

Spraying the entire soil surface is more practicable in heavily infested areas. It kills ants in the mounds and wherever else they may be.

Spray evenly. Use a weed-boom attachment in conjunction with a power sprayer. Tractor sprayers and orchard sprayers are also effective. Compressed-air sprayers may be used with good results for treating small areas.

Four pounds of chlordane or 2 pounds of dieldrin, aldrin, or heptachlor per acre control imported fire ants for two growing seasons. Apply any of them at this rate to uncultivated land when crops are not grown for use as food or livestock feed.

For cultivated land, apply no more than one treatment annually after crops have been harvested, preferably in the fall or spring. It is desirable to follow the treatment by disking.

To prepare the spray, mix the insecticide as follows:

Emulsifiable Concentrate	Quarts per acre
45% chlordane.....	4
23% aldrin.....	4
15½% dieldrin.....	6
23% heptachlor.....	4
Wettable Powder	Pounds per acre
40% chlordane.....	10
25% aldrin.....	8
25% dieldrin.....	8
25% heptachlor.....	8

Use these quantities of insecticide in the amount of water your sprayer will require to cover an acre.

When applying these insecticides in pastures where dairy animals or animals being finished for slaughter are grazing, avoid area treatment. Treat individual mounds as recommended in the preceding section.

In lawns and park areas where children play, apply half the dosage of these insecticides in the same amount of water. A good watering after each treatment makes it more effective and reduces the toxic hazard.

If you find it necessary to focus your control efforts on individual plants, use a 5-percent chlordane dust, a 1½-percent dieldrin dust, a 2½-percent aldrin dust, a 2½-percent heptachlor dust, or a 0.25-percent spray. Apply dust or spray around the base of the stem or trunk. *Be careful not to get the insecticide on the edible portions of the plant.*

BUILDING AND LAWN TREATMENT

A 2-percent chlordane spray applied to foundations and steps and to wires and pipes leading into homes prevents imported fire ants from infesting homes for at least 60 days.

An emulsion is very efficient for this type of treatment. Use it with a

PRECAUTIONS

Chlordane, dieldrin, heptachlor, and aldrin are poisons; use them according to directions. Avoid inhaling the dusts or sprays. Use a respirator in mixing and blending operations. If you spill the concentrated insecticides on your skin, wash immediately with soap and water. Launder clothes that become contaminated. Do not permit children or pets to go on treated lawns until insecticide has been washed into the soil by rain or by watering.

compressed-air sprayer. Prepare a 2-percent emulsion spray as follows:

11 tablespoonfuls of 45-percent emulsifiable concentrate in 1 gallon of water, or 3½ pints in 10 gallons of water.

You can free your lawn of imported fire ants by applying 2 pounds of actual chlordane, 1 pound of aldrin, 1 pound of heptachlor, or 1 pound of dieldrin per acre. Use the table below in preparing spray to cover 1,000 square feet of lawn surface. Add the insecticide to the amount of water needed (3 to 6 gallons) to cover 1,000 square feet. Water lawn after treatment.

Emulsifiable Concentrate	Tablespoonfuls per 1,000 square feet
45% chlordane.....	3
23% aldrin.....	3
15½% dieldrin.....	5
23% heptachlor.....	3
Wettable Powder	Tablespoonfuls per 1,000 square feet
40% chlordane.....	7
25% aldrin.....	5
25% dieldrin.....	5
25% heptachlor.....	5

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